Complex. Three primary components (geology, soil and vegetation) were sampled and analysed to determine the effect of the intrusions on the supported vegetation type. Weathering of the dioritic to ultramafic lithologies greatly affected the soils' chemical properties and related vegetation. Major chemical variation in the soil is ascribed to weathering of Ca- and Mg-rich silicate minerals. The amount of Ca- and Mg- bearing minerals present in the rock type, and the associated weathering rate, are the most important factors affecting woody species distribution on ultramafic lithologies in the dome. Certain woody species show significant preferences towards soils containing mafic or felsic minerals and can be used as indicators of such geological environments. This study thus confirms the presence of serpentine vegetation in the Dome. The next step is to determine whether it harbours a unique serpentine flora.

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Diagnostic characters of *Boerhavia* L. in southern Africa: Morphology, anatomy, palynology and biogeography

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Boerhavia L. is a genus of about 40 species in the Nyctaginaceae Juss. and is widespread in the tropical and subtropical regions of the world. Sixteen species of *Boerhavia* occur in Africa, and seven in southern Africa of which four are indigenous (*B. coccinea* Mill. var. *coccinea*, *B. deserticola* Codd, *B. hereroensis* Heimerl and *B. repens* L. var. *repens*), and three are introduced from the Americas (*B. cordobensis* Kuntze, *B. diffusa* L. var. *diffusa* and *B. erecta* L.). The *Boerhavia* species of southern Africa first received taxonomic attention forty years ago after which only four species (*B. coccinea* var. *coccinea*, *B. diffusa* var. *diffusa*, *B. erecta* and *B. repens* subsp. *repens*.) were subsequently treated in Floras concerning other parts of the world. *Boerhavia* species are frequently confused with one another and are locally easily confused with *Commicarpus* Standl. species, leading to incorrect identifications and a general misunderstanding of the species concept of the genus. The seven southern African *Boerhavia* species were therefore investigated to circumscribe diagnostic characters based on anatomy, morphology, palynology and biogeography. The anthocarp morphology provided the most reliable diagnostic characters to distinguish between species, with the anthocarp shape, presence of ribs or wings and gland arrangement being of the highest taxonomic value. Anatomical structures and the overall shape and sculpture of the pollen grains were uniform and not differentially diagnostic at infrageneric level. Distribution patterns contribute to the species definitions as *Boerhavia deserticola* and *B. hereroensis* are endemic to the arid north-western part of Namibia. Their distributions do not overlap with the other two indigenous species that are widespread in semi-arid regions of Botswana, Namibia and South Africa.

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A Demonstration of CASABIO's "Biodiversity Engine"

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CASABIO - "The Home of Biodiversity" is an NGO dedicated to the digital documentation of biodiversity for conservation, education and research purposes. The long-awaited Biodiversity Engine incorporates a number of novel features that make the system both efficient and powerful. This efficiency makes data input exponentially quicker than traditional databases. Additional data can be associated such as habitat information and organism parts. A system of tagging allows for the generation of explicit interactions between organisms within photographs. The system can then be interrogated with questions such as "what does organism A eat?" or "what pollinates organism B?". The reporting module makes use of images and information to make the output of species lists, herbarium labels and field guides quick and easy. This software is suitable for anyone that takes photographs of organisms and wants them identified, or knows their identification. A live demonstration of the system will take place, and the workflow demonstrated. Additionally model examples will be utilized to showcase interactions using the Relationship Module.

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A monograph of the cycad genus *Encephalartos* (Zamiaceae)

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Cycad (Cycadophyta) research is of special biological interest due to apparent morphostasis throughout their long history, allowing paleo and evolutionary inference based on extant taxa. Their basal position to seed plants and phylogenetic isolation manifest in unique and broadly important characteristics. Unfortunately cycads are also the most threatened group of plants worldwide. Of the ten currently recognised genera, *Encephalartos* (Zamiaceae; 67 taxa) and the monotypic *Stangeria* (Zamiaceae) are endemic to Africa, with South Africa a diversity hotspot. Though *Encephalartos* taxonomy has remained fairly stable for the last two decades, several newly described species have been synonymised. Species delimitations are unsatisfactory in many cases. This is in part due to the horticultural popularity of the group resulting in unsatisfactory taxonomic work and an over appreciation of species diversity. However, plants not attributable to any known species exist. There are also a lack of population-based field observations and adequate appreciation and comparison of variation. Evidence from molecular systematics has failed as a "quick fix", and until recently taxonomic research has been hampered by a lack of an accurate phylogeny. Recent molecular evidence has nevertheless shown the need for a new infrageneric classification, though diagnosis of these clades is difficult with current knowledge. Traits such as slow growth and reproduction, confinement to often difficult to reach habitats, and rarity results in the genus being poorly known in many respects. Due to the group's horticultural popularity, conservation status and many taxonomic uncertainties, there is a great need for reliable identification keys. This project aims to produce a monograph of the genus including population assessments, IUCN Red List recommendations, and a review of the taxonomic significance of existing and new characters. Other aspects including ecology, symbioses, and biogeography will be investigated as interest dictates.

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